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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Marsh et al.

Docket No.: TI-29655

Serial No.: 09/705,466

Art Unit: 1725

Filed: 28 December 2000

Examiner: Pittman, Zidia T.

For: COMPLIANT WIREBOND PEDESTAL

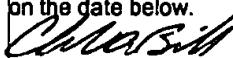
APPEAL BRIEF TRANSMITTAL

14 January 2004

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

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Charles A. Brill

14 Jan 2004
Date

Transmitted herewith in triplicate is an Appeal Brief in the above-identified application.

Please charge the \$330.00 fee for filing the Brief to the deposit account of Texas Instruments Incorporated, Account No. 20-0668.

Charge any additional fees, or credit overpayment to Deposit Account No. 20-0668. Three copies of this sheet are enclosed.

Respectfully submitted,



Charles A. Brill
Attorney for Applicant(s)
Reg. No. 37,786

Texas Instruments Incorporated
P. O. Box 655474, MS 3999
Dallas, Texas 75265
Telephone: (972) 917-4379
Fax: (972) 917-4418



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Marsh et al.

Art Unit: 1725

Serial No.: 09/750,827

Examiner: Pittman, Zidia T.

Filed: 28 December 2000

Docket No.: TI-29655

For: COMPLIANT WIREBOND PEDESTAL

APPEAL BRIEF UNDER 37 C.F.R. § 1.192

14 January 2004

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

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	14 Jan 2004
Charles A. Brill	Date

Dear Sir:

The following Appeal Brief is respectfully submitted, in triplicate, in connection with the above-identified application in response to the Final Rejection mailed 23 April 2003. Please charge all required fees to the deposit account of Texas Instruments Incorporated, Deposit Account No. 20-0668.

REAL PARTY IN INTEREST

The real party in interest is Texas Instruments Incorporated, to whom this application is assigned.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known to the Applicant's legal representative.

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STATUS OF THE CLAIMS

This application was filed on 28 December 2000 with seventeen claims, three of which were written in independent form. Claims 9-17 were withdrawn as being directed to an un-elected invention in response to restriction requirements mailed 22 February 2002 and 9 May 2002. Claims 18-27 were added by amendment filed 29 January 2003. Claims 1-7, 18-25, and 27 stand rejected, claims 8 and 26 have been objected to as being dependent upon a rejected base claim.

STATUS OF THE AMENDMENTS

An amendment was filed on 29 January 2003 and has been entered. No amendment after final rejection has been filed.

SUMMARY OF THE INVENTION

Specification page 7 and page 8 lines 1-18, provide a concise explanation of the invention defined in the appealed claims. The invention provides a holder for restraining and electrically grounding a component during a wire bond process. A conductive resilient member provides a good electrical ground connection between the component being bonded and the bonder ground. The resilient member is elastic enough to conform to the device as a vacuum holds the device against the pedestal—thus ensuring a good ground—yet firm enough to prevent excessive movement by the package being bonded (see page 9, lines 3-5).

ISSUES

1. Whether Claim 1 is unpatentable under 35 U.S.C. § 103 (a) over U.S. Patent 5,324,012 to Aoyama et al. ("Aoyama") in view of U.S. Patent No. 6,085,962 to Jacobson et al. ("Jacobson").
2. Whether Claim 3 is unpatentable under 35 U.S.C. § 103 (a) over U.S. Patent 5,324,012 to Aoyama in view of U.S. Patent No. 6,085,962 to Jacobson.
3. Whether Claim 19 is unpatentable under 35 U.S.C. § 103 (a) over U.S. Patent 5,324,012 to Aoyama in view of U.S. Patent No. 6,085,962 to Jacobson.
4. Whether Claim 21 is unpatentable under 35 U.S.C. § 103 (a) over U.S. Patent 5,324,012 to Aoyama in view of U.S. Patent No. 6,085,962 to Jacobson.

GROUPING OF THE CLAIMS

Claims 1, 3, 19, and 21 are independently patentable and stand or fall individually for the reasons more clearly set forth hereinbelow.

Claims 2, 5-7, and 18 stand or fall together with Claim 1, from which Claims 2, 5-7, and 18 depend. Claim 4 stands or falls with Claim 3, from which Claim 4 depends. Claims 20, 23-25, and 27 stand or fall together with Claim 19, from which Claims 20, 23-25, and 27 depend. Claim 22 stands or falls with Claim 21, from which Claim 22 depends. Claims 8 and 26 have not been rejected and should be deemed allowable.

ARGUMENTS

Issue 1: Whether Claim 1 is unpatentable under 35 U.S.C. § 103 (a) over U.S. Patent 5,324,012 to Aoyama et al. ("Aoyama") in view of U.S. Patent No. 6,085,962 to Jacobson et al. ("Jacobson").

Claim 1 was rejected as being unpatentable under 35 U.S.C. § 103 (a) over Aoyama in view of Jacobson. The applicant respectfully disagrees.

"To support the conclusion that the claimed combination is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed combination or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985).

"All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP § 2143.03 (citing In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)).

Claim 1 recites, "a conductive resilient member supported by said rigid pedestal." The Examiner stated, "Aoyama et al does not [sic] a conductive resilient member supported by said rigid pedestal." The Examiner states, "Jacobson et al teaches a wire bond monitoring system for layered packages. A laminate package trace makes electrical contact with the back of the die and communicates through a via with the machine. The machine, in turn, is connected to the ground. The via is effectively a hole through the laminate package, which is metal lined so that an electrical connection is made between the metal trace and the ground through the machine. While the opening may not be of considerable size and access to it may require weaving through the solder mask past the die, a connection can be made by the wire bonder clamp to the laminate package trace

using a flexible contact. In addition, even if the surface to be contacted is irregular, a good contact can be made using the flexible contact. Through the use of the flexible connection, contact may be made in a variety of inaccessible positions to facilitate continuity testing in layered packages. A conductive resilient material may also be used as a contact. The material may be a Z-axis foam or rubber which is conductive. The material may be a T-shaped so that it may be retained in the clamp will extending downwardly to flexibly and resiliently contact the trace. (abstract; Figures 1-4; column 2 lines 46-49 and 62-67; column 3 lines 24-32 and 56-61)." (emphasis added)

The Examiner has misstated Jacobson's teachings by combining alternate methods without supporting teachings in the art. These two separate teachings by Jacobson are combined by the Examiner such that it appears that "the opening" underlined above is referring to "the via" in the previous sentence. This clearly is not the case.

Referring to Figure 1, Jacobson states, "A laminate package trace 18 makes electrical contact with the back side of the die 13 and communicates through a via 20 with the machine 10. The machine 10, in turn, is connected to the ground 26." (column 2, lines 46-49) Jacobson further states, "The via 20 is effectively a hole through the laminate package 12, which is metal lined so that an electrical connection is made between the metal trace 18 (and the back of the die 13) and the ground 25 through the machine 10." (column 2, lines 62-65).

Jacobson further teaches, "In some cases, a via 20 may not be available or for other reasons, it may not be possible to make the continuity check by making a connection through the laminate package 12. For example, it may not be possible to

make a good contact with the back of the die 13. As shown in FIG. 2, a portion of a laminate package trace 18, accessible through an opening 31 in a solder mask 32, may then be contacted from above. While opening 31 may not be of considerable size and access to it may require weaving through the solder mask past the die 13, a connection may be made by the wire bonder clamp 29 to the laminate package trace 18 using a flexible contact 30."

While the Examiner selectively quotes Jacobson to appear to teach the use of a flexible contact to reach via 20, Jacobson clearly teaches using a flexible contact 30 to reach laminate package trace 18 through opening 31 from above when via 20 is not available or when it is not possible to make a connection through the laminate package 12. Thus, Jacobson teaches away from "a conductive resilient member supported by said rigid pedestal" as recited by Claim 1.

Not only do the references fail to expressly or impliedly suggest the claimed combination, the Examiner has also failed to present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references as required by Clapp.

The Examiner stated, "At the time of the invention, it would have been obvious to modify the teachings of Aoyama et al with the teachings of Jacobson et al in order to improve the electrical conductivity and contacts of the holding apparatus." The applicant respectfully disagrees.

The Examiner stated "Aoyama et al does not [sic] a conductive resilient member supported by said rigid pedestal." As argued above, Jacobson teaches contact between a wire bonder 10 and a via 20, or using a flexible contact 30 to reach laminate package

trace 18 through opening 31 from above when via 20 is not available or when it is not possible to make a connection through the laminate package 12." Thus, the combination would appear to suggest using a flexible contact to reach a package trace from above when contact through the holder is not possible.

For the reasons stated above, the Examiner has not met the burden of presenting a prima facie case of obviousness. Therefore, the rejection of Claim 1 under 35 U.S.C. § 103 (a) is defective and should be withdrawn.

Issue 2: Whether Claim 3 is unpatentable under 35 U.S.C. § 103 (a) over U.S. Patent 5,324,012 to Aoyama in view of U.S. Patent No. 6,085,962 to Jacobson.

Claim 3 depends from Claim 1 and should be deemed allowable for the reasons argued above with respect to Claim 1 and for the additional reasons argued below.

Claim 3 recites, "said conductive resilient member further comprising a first face operable to engage said electrical contacts, said first face extending beyond adjacent portions of said rigid pedestal."

The Examiner stated, "Aoyama et al does not [sic] . . . said conductive resilient member further comprising a first face operable to engage said electrical contacts, said first face extending beyond adjacent portions of said rigid pedestal."

The Examiner has not made any effort to apply the teachings of Jacobson to the limitations of Claim 3. It is far from clear how the flexible connection 30 of Jacobson comprises a first face extending beyond adjacent portions of a rigid pedestal. Therefore, the Examiner has not met the burden of presenting a prima facie case of obviousness, and the rejection of Claim 3 under 35 U.S.C. § 103 (a) is defective and should be withdrawn.

Issue 3: Whether Claim 19 is unpatentable under 35 U.S.C. § 103 (a) over U.S. Patent 5,324,012 to Aoyama in view of U.S. Patent No. 6,085,962 to Jacobson.

Claim 19 was rejected as being unpatentable under 35 U.S.C. § 103 (a) over Aoyama in view of Jacobson. The applicant respectfully disagrees.

“To support the conclusion that the claimed combination is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed combination or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985).

“All words in a claim must be considered in judging the patentability of that claim against the prior art.” In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). “To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” MPEP § 2143.03 (citing In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)).

Claim 19 recites, “a rigid pedestal for supporting a first surface of a component, said first surface of said component having electric contacts in electrical communication with bond pads on a second side of said component; and a conductive resilient member supported by said rigid pedestal and electrically connected to said electrical ground, said conductive resilient member operable to engage said electrical contacts on said component electrically connecting said contacts with said electrical ground.”

The Examiner stated, “Aoyama et al does not [sic] a conductive resilient member supported by said rigid pedestal.” As explained above with respect to Claim 1, Jacobson teaches supporting a device 12 and using a flexible contact 30 to reach laminate package trace 18 through opening 31 from above when via 20 is not available or when it is not possible to make a connection through the laminate package 12. Thus, Jacobson teaches away from “a rigid pedestal for supporting a first surface of a component, said first surface of said component having electric contacts” and a “conductive resilient member operable to engage said electrical contacts” as recited by Claim 19.

Not only do the references fail to expressly or impliedly suggest the claimed combination, the Examiner has also failed to present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references as required by Clapp.

The Examiner stated, “At the time of the invention, it would have been obvious to modify the teachings of Aoyama et al with the teachings of Jacobson et al in order to improve the electrical conductivity and contacts of the holding apparatus.” The applicant respectfully disagrees. Aoyama in view of Jacobson does not suggest “a rigid pedestal for supporting a first surface of a component, said first surface of said component having electric contacts” and a “conductive resilient member operable to engage said electrical contacts” as recited by Claim 19.

For the reasons stated above, the Examiner has not met the burden of presenting a prima facie case of obviousness. Therefore, the rejection of Claim 19 under 35 U.S.C. § 103 (a) is defective and should be withdrawn.

Issue 4: Whether Claim 21 is unpatentable under 35 U.S.C. § 103 (a) over U.S. Patent 5,324,012 to Aoyama in view of U.S. Patent No. 6,085,962 to Jacobson.

Claim 21 depends from Claim 19 and should be deemed allowable for the reasons argued above with respect to Claim 19 and for the additional reasons argued below.

Claim 21 recites, “said conductive resilient member further comprising a first face operable to engage said electrical contacts, said first face extending beyond adjacent portions of said rigid pedestal.”

The Examiner stated, “Aoyama et al does not [sic] . . . said conductive resilient member further comprising a first face operable to engage said electrical contacts, said first face extending beyond adjacent portions of said rigid pedestal.”

The Examiner has not made any effort to apply the teachings of Jacobson to the limitations of Claim 21. It is far from clear how the flexible connection 30 engaging the top surface of Jacobson comprises “a first face operable to engage said electrical contacts” on a first surface supported by a rigid pedestal, “said first face extending beyond adjacent portions of a rigid pedestal.” Therefore, the Examiner has not met the burden of presenting a *prima facie* case of obviousness, and the rejection of Claim 3 under 35 U.S.C. § 103 (a) is defective and should be withdrawn.

CONCLUSION

For the foregoing reasons, Appellants respectfully submit that the Examiner’s final rejection of Claims 1-7, 18-25, and 27 under 35 U.S.C. § 103 (a) as being unpatentable over Aoyama in view of Jacobson is improper, and it is respectfully requested that the Board of Patent Appeals and Interferences so find and reverse the Examiner’s rejection.

Please charge any fees necessary in connection with the filing of this paper,
including any necessary extension of time fees, to Deposit Account No. 20-0668 of Texas
Instruments Incorporated.

Respectfully submitted,



Charles A. Brill
Attorney for Applicant
Reg. No. 37,786

Texas Instruments Incorporated
P.O. Box 655474 M/S 399
Dallas, TX 75265
(972) 917-4379
FAX: (972) 917-3511

APPENDIX

1. (Original) A holder for restraining and electrically grounding a component during a wire bonding process, said holder comprising:
 - an electrical ground;
 - a rigid pedestal; and
 - a conductive resilient member supported by said rigid pedestal and electrically connected to said electrical ground, said conductive resilient member operable to engage electrical contacts on said component electrically connecting said contacts with said electrical ground.
2. (Original) The holder of Claim 1, said rigid pedestal further comprising a vacuum cavity, said vacuum cavity operable to hold said component against said rigid pedestal.
3. (Original) The holder of Claim 1, said conductive resilient member further comprising a first face operable to engage said electrical contacts, said first face extending beyond adjacent portions of said rigid pedestal.
4. (Original) The holder of Claim 3, said conductive resilient member operable to deform as said component is pressed against said conductive resilient member such that said component contacts said adjacent portions of said rigid pedestal.
5. (Original) The holder of Claim 1, wherein said component is grounded through said conductive resilient member and said pedestal.
6. (Original) The holder of Claim 1, wherein said conductive resilient member is a silicone elastomer.
7. (Original) The holder of Claim 1, wherein said conductive resilient member is a

silicone elastomer impregnated with a metal.

8. (Original) The holder of Claim 1, wherein said conductive resilient member is a Ag-Cu filled silicone elastomer.

9. (Withdrawn) A wirebond machine comprising:

- an electrical ground;
- a source of bond wire;
- a capillary tube holding a portion of said bond wire;
- an arm attached to said capillary tube for pressing said wire held in said tube against bond pads on a device and package; and
- a rigid pedestal for supporting said device and package, said rigid pedestal comprising a conductive resilient member electrically connected to said electrical ground operable to engage electrical contacts on said package and electrically connect said contacts to said electrical ground.

10. (Withdrawn) The wirebond machine of Claim 9, wherein said conductive resilient member is a silicone elastomer.

11. (Withdrawn) The wirebond machine of Claim 9, wherein said conductive resilient member is a silicone elastomer impregnated with a metal.

12. (Withdrawn) The wirebond machine of Claim 9, wherein said conductive resilient member is a Ag-Cu filled silicone elastomer.

13. (Withdrawn) A method of attaching bond wires to a semiconductor device and package, the method comprising the steps of:

- providing an electrically ground;
- providing a rigid pedestal having a vacuum cavity and at least one

conductive resilient member on a surface of said rigid pedestal;
placing a component on said surface, said component comprised of a package and an electrical device inside said package;
holding said component against said surface using a vacuum applied to said vacuum cavity to form a ground connect between said component and said conductive resilient member;
attaching a bond wire to a bond pad on said package and a bond pad on said electrical device inside said package.

14. (Withdrawn) The method of Claim 13, said step of providing a rigid pedestal further comprising the step of providing a rigid pedestal having at least one conductive resilient member comprised of an elastomer on a surface of said rigid pedestal.

15. (Withdrawn) The method of Claim 13, said step of providing a rigid pedestal further comprising the step of providing a rigid pedestal having at least one conductive resilient member comprised of a silicone elastomer on a surface of said rigid pedestal.

16. (Withdrawn) The method of Claim 13, said step of providing a rigid pedestal further comprising the step of providing a rigid pedestal having at least one conductive resilient member comprised of a metal impregnated silicone elastomer on a surface of said rigid pedestal.

17. (Withdrawn) The method of Claim 13, said step of providing a rigid pedestal further comprising the step of providing a rigid pedestal having at least one conductive resilient member comprised of a Ag-Cu filled elastomer on a surface

of said rigid pedestal.

18. (Previously presented) The holder of Claim 1, said resilient member positioned in grooves formed in said rigid pedestal.

19. (Previously presented) A holder for restraining and electrically grounding a component during a wire bonding process, said holder comprising:

an electrical ground;

a rigid pedestal for supporting a first surface of a component, said first surface of said component having electric contacts in electrical communication with bond pads on a second side of said component; and

a conductive resilient member supported by said rigid pedestal and electrically connected to said electrical ground, said conductive resilient member operable to engage said electrical contacts on said component electrically connecting said contacts with said electrical ground.

20. (Previously presented) The holder of Claim 19, said rigid pedestal further comprising a vacuum cavity, said vacuum cavity operable to hold said component against said rigid pedestal.

21. (Previously presented) The holder of Claim 19, said conductive resilient member further comprising a first face operable to engage said electrical contacts, said first face extending beyond adjacent portions of said rigid pedestal.

22. (Previously presented) The holder of Claim 21, said conductive resilient member operable to deform as said component is pressed against said conductive resilient member such that said component contacts said adjacent portions of said rigid pedestal.

23. (Previously presented) The holder of Claim 19, wherein said component is grounded through said conductive resilient member and said pedestal.
24. (Previously presented) The holder of Claim 19, wherein said conductive resilient member is a silicone elastomer.
25. (Previously presented) The holder of Claim 19, wherein said conductive resilient member is a silicone elastomer impregnated with a metal.
26. (Previously presented) The holder of Claim 19, wherein said conductive resilient member is a Ag-Cu filled silicone elastomer.
27. (Previously presented) The holder of Claim 19, said resilient member positioned in grooves formed in said rigid pedestal.